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Ms. Magalie R. Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

RE: *WorldCom, Cox, and AT&T v. Verizon*
CC Docket Nos. 00-218, 00-249, and 00-251

Dear Ms. Salas:

Enclosed for filing please find 4 public versions of Verizon Virginia Inc.'s ("Verizon VA") surrebuttal testimony, consisting of three volumes. Electronic copies were served on the parties and Commission Staff on Friday, September 21, 2001.

Volume I contains information proprietary to AT&T; and Volumes II and III contains information proprietary to Verizon and other parties. This proprietary information has been redacted from the publicly available copies.

Verizon VA is also serving 8 proprietary and 2 public versions of the testimony on Commission Staff.

Please call Scott Randolph (202-515-2530) or me if you have any questions.

Very truly yours,

Catherine Kane Ronis

Catherine Kane Ronis
Attorney for Verizon Virginia Inc.

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cc: Dorothy Attwood (8 proprietary copies; 2 public copies)
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In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of Petition of Cox Virginia Telecom, Inc., etc.	)	CC Docket No. 00-249
In the Matter of Petition of AT&T Communications of Virginia Inc., etc.	)	CC Docket No. 00-251

VERIZON VIRGINIA INC.

VOLUME I OF III

SURREBUTTAL TESTIMONY OF DR. HOWARD SHELANSKI, DR. TIMOTHY TARDIFF, DR. JAMES VANDER WEIDE, DR. JOHN LACEY, MR. ALLEN SOVEREIGN, MR. JOSEPH GANSERT, AND MR. LOUIS D. MINION

- Economic Foundations
- Cost of Capital
- Depreciation
- Resale Discount

(Public Version)
SEPTEMBER 21, 2001

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of Petition of AT&T Communications of Virginia Inc., Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia Corporation Commission Regarding Interconnection Disputes With Verizon Virginia Inc.	)	CC Docket No. 00-251

VERIZON VIRGINIA INC.'S SURREBUTTAL TESTIMONY

CERTIFICATE OF SERVICE

I do hereby certify that true and accurate electronic copies of Verizon Virginia Inc.'s Surrebuttal Testimony, Volumes I-III, were delivered this 24th day of September, 2001, by hand to:

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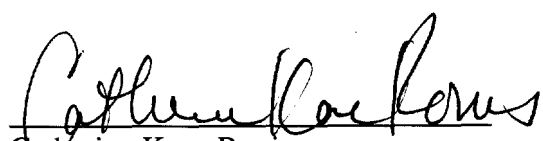

Catherine Kane Ronis

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VERIZON VIRGINIA INC.

SURREBUTTAL TESTIMONY OF DRS. HOWARD SHELANSKI AND TIMOTHY TARDIFF

SEPTEMBER 21, 2001

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I. INTRODUCTION AND PURPOSE (JDPL ISSUES II-1-A TO II-1-C; II-2-A TO II-2-C)

Q. Dr. Shelanski, are you the same Howard Shelanski who filed direct testimony concerning economic issues on July 31, 2001 and rebuttal testimony on August 27, 2001?

A. Yes.

Q. Dr. Tardiff, are you the same Timothy Tardiff that filed rebuttal testimony concerning the AT&T/WorldCom Modified Synthesis Model in this case?

A. Yes.

Q. Dr. Tardiff, in addition to submitting this surrebuttal testimony, are you adopting previous testimony as your own?

A. Yes. I have reviewed Dr. Gordon's direct testimony filed in this case on July 31, 2001, and am adopting it as my own direct testimony in this proceeding.

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to address the arguments made by Ms. Murray on behalf of AT&T/WorldCom concerning the appropriate method for calculating long-run, forward-looking costs and her contentions that Verizon VA's cost study methods do not comport with either economic principles or with the Commission's TELRIC rules. We also address certain economic issues raised by the AT&T/WorldCom Rebuttal Panel testimony.

Q. What are your principal conclusions?

A. As described in more detail below, we conclude that:

- Contrary to Ms. Murray's testimony, the principles and modeling approach advocated in Verizon VA's direct testimony and incorporated in its studies reflect correct, generally accepted economic theory.

- The instantaneous and successive replacement model that Ms. Murray advocates is neither economically correct nor necessary for a long-run, forward-looking cost study. Moreover, her argument that such a model is the only model compatible with a forward-looking, total incremental cost approach to UNE pricing or with the Commission's TELRIC rules is incorrect.

- In particular, a "long-run" cost study, while requiring that all inputs be potentially variable, does *not* require that all inputs in fact be varied and certainly not that they all be varied instantaneously today and then successively again every few years. Rather, in a technologically dynamic market, costs are minimized over the long run through incremental changes and investments. Moreover, while Ms. Murray attempts to make much of the proposition that the cost of new technologies may constrain the value of existing technologies, as we explain below, her analysis fails to account for numerous factors.

- Ms. Murray's testimony does not undermine the conclusions in Verizon VA's direct testimony — *i.e.*, Verizon VA's cost estimation approach is consistent with economic principles and is the most economically appropriate way to implement the Commission's TELRIC rules.

- Contrary to Ms. Murray's testimony, Verizon VA's approach appropriately assumes a forward-looking mix of technology deployed network-wide. Moreover, its inputs concerning loops, routes, switching, utilization factors, expenses, and OSS are appropriately forward-looking.

- Ms. Murray's criticisms of Verizon VA's non-recurring studies miss the mark. Verizon VA's approach correctly estimates the forward-looking non-recurring costs it expects to incur.

- For the reasons given here and in previous testimony, Verizon VA's studies reflect the most economically correct interpretation of TELRIC and should be adopted by the Commission.

II. AN ECONOMICALLY CORRECT MODEL FOR LONG-RUN, FORWARD-LOOKING COSTS MUST RECOGNIZE THAT CARRIERS DEPLOY NEW TECHNOLOGIES INCREMENTALLY, NOT INSTANTANEOUSLY AND UBIQUITOUSLY. (JDPL ISSUES II-1-A TO II-1-C; II-2-A TO II-2-C)

Q. What approach to long-run cost modeling do Ms. Murray and her clients advocate?

A. Ms. Murray argues that the only correct long-run, forward-looking cost model is one in which, as technology improves, existing facilities are always assumed to be instantly replaced with the new technology. For example, a car rental agency would, applying the approach of Ms. Murray and her clients, always model its costs as if it planned to get rid of its existing cars and replace them with the latest, most efficient model. And it would do so regardless of the purchase price of the new cars or the condition of the existing cars. For local exchange carriers, Ms. Murray states that long-run, incremental costs should be modeled as if firms today, and repeatedly at defined intervals in the future, instantly replace their existing networks with the latest technology without regard to whether the equipment they are replacing was bought last month or last century and regardless of the price of the new equipment or uncertainty about future changes in technology and demand. She expressly argues that the efficient rate of network replacement and expansion is "irrelevant" to the determination of the forward-looking costs on which UNE prices are based.[1/] This argument is plainly at odds with economic principles and with the goal of long-run cost minimization.

1/ Murray Rebuttal at 18.

Q. What is your central disagreement with Ms. Murray?

A. The fundamental disagreement boils down to the following contrast. Ms. Murray asserts that prices in competitive markets would be consistent with the proposition that there would always be a firm that could instantly design an entire network and install completely current technology ideally configured to serve today's customers. In Ms. Murray's world, a real network would always be considered inefficient compared to her hypothetical ideal. In contrast, Verizon's study is completely forward-looking in that it "reconstructs" the network with a forward-looking technology mix, but it recognizes the fact that no real world firm deploying and operating a network built from components with long asset lives would ever build the entire network instantaneously. Because efficient firms add and replace network plant on an incremental rather than total basis, their long-run, forward-looking cost models should incorporate new technology only as existing plant loses economic value. In other words, they should replace equipment only when it becomes more costly for the firm to maintain and operate an existing facility going forward than it would be for the firm to purchase and operate newer technology, taking into account in this calculation anticipated future developments in demand and technology. And these facts of life are reflected in inputs such as the discounts for switching equipment and the amounts of spare capacity included in the cost estimates.

As a consequence, when the starting point of the investment analysis is an existing network rather than a blank slate, the long-run, cost-minimizing network configuration may differ from the "efficient" configuration of a hypothetical firm

building a network to serve the same customers from scratch. It is almost certainly more efficient for any operator of an existing network to move forward *incrementally* with some mix of old and new equipment — a mix that takes into account the forward-looking economic value of the existing network and risk factors for changing technology and demand — as it expands and replaces its network. Indeed, Ms. Murray herself concedes that this approach by an existing carrier "may be entirely rational."[2/]

In essence, Ms. Murray and her clients would have the Commission believe that a network could be constructed and deployed efficiently at a single point in time and could, from then on, be used to serve "current and reasonably foreseeable demand."[3/] Not only is this "instantaneous network" wholly unrealistic, but it would also be, under her reasoning, quickly obsolete. Because her network is built only with the latest technology, sized optimally to meet current and reasonably foreseeable demand, her perfect (but static) network could be superceded by an even better network the next day. And the perfect network Ms. Murray hypothesizes has the luxury of being rebuilt from scratch every few years when prices are re-set and another new, perfect network is reconstructed. The notion of a perfectly sized, instantaneous network, coupled with successive reconstructions, is the essence of Ms. Murray's unrealistic approach. This approach is not based on an obtainable long-run result. It ignores that all —

[2/] Murray Rebuttal at 17.

[3/] *Id.* at 2. For example, Ms. Murray states that: "Dr. Shelanski's contention that 'an economically correct cost study should not discard the entire existing network and proceed based on the assumption that the firm has instantaneously built a hypothetical, new network' is inconsistent with th[e] rule" she advocates. *Id.* at 8.

incumbents' and entrants' — networks are deployed over time in an uncertain world. Thus, we do not believe that the Commission's rules require the use of the untenable assumptions supported by Ms. Murray.

A. Contrary to Ms. Murray's Assertions, the Approach Advocated in Verizon VA's Testimony Is Entirely Consistent with a Study of "Long-Run" Costs.

Q. Is your approach consistent with the economic definition of the "long run"?

A. Yes. Ms. Murray attempts to argue that, while Dr. Shelanski provides the correct economic definition of a long-run analysis in his testimony, he advocates an approach that is inconsistent with that definition.[4/] Her argument is incorrect, however, and ignores substantial portions of Dr. Shelanski's direct testimony.

The important point for a long-run study is that it not constrain any production technology to its current state and that it make all inputs variable over the long term. Furthermore, a long-run analysis should look as far forward as possible in determining the efficient state that inputs should be varied *to*. But it does not necessarily follow, as Ms. Murray seems to contend, that a long-run study must actually change all inputs from their existing state and certainly not that it make such changes in the short run, let alone immediately. The simplest example that demonstrates the point is the case of a firm that has an optimally configured network containing the latest technology and that operates in an industry in which neither technology nor demand conditions are predicted

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4/ *Id.* at 8-9.

to change. In that case, the existing state and the optimal long-run state are the same and inputs will not vary in a long-run model. There is nothing to change the inputs to that would make economic sense.

The same condition of there being no economically rational change to be made in inputs can, and often will, also hold in a technologically dynamic industry, even if the firm in question does not ubiquitously deploy the most current and advanced technologies available today. A firm might know how to minimize costs today, and it may also know how it would optimally change its productive inputs one, two, or several years from now with predicted changes in technology. But this does not mean that the firm will necessarily vary all of its current facilities to the best technology available today or in the foreseeable future. For, if technology is expected to continue to change, the firm may reach a point in its modeling of the long run where it knows only that change will occur but cannot reasonably predict how much change will cost or how it will affect the firm's cost structure. Such practical limits on foresight in a technologically dynamic environment mean that a firm might make a costly mistake by varying its inputs to the best that are foreseeable, only to find the costs of such technology stranded when a yet better technology comes along.

As explained in Dr. Shelanski's direct testimony, a firm engaging in a long-run analysis of network optimization must therefore balance the theoretical ideal of making as much of the network costs as possible variable against the real risks of future changes in technology or demand conditions that could render today's investments obsolete

sooner than anticipated.[5/] These costly risks mean that an efficient firm, even while trying to make its cost study as long-run as possible, will be constrained to examine a finite period over which risk and uncertainty are efficiently managed but over which not all inputs may in fact be varied. To say that Verizon VA's use of a three-year time horizon is consistent with a long-run analysis is thus not, as Ms. Murray suggests, to contradict the economic definition of the long run, but only to recognize that there are practical constraints on a firm's ability to meet that ideal in the real world. Moreover, as discussed below, Ms. Murray mischaracterizes the role of the three-year planning period in Verizon VA's studies.

Q. Does the textbook definition of "long-run" cited by Ms. Murray imply that an efficient firm always has the latest in technology and network design? [Murray Rebuttal at 12.]

A. No. In fact, Ms. Murray acknowledges that it would *not* be efficient for Verizon VA to instantaneously and ubiquitously incorporate the latest technologies in its network:

> Verizon's business decision to deploy the preferred forward-looking technology incrementally over a period of time, rather than replace all of its facilities today, may be entirely rational. But that business decision has nothing to do with the determination of the long-run economic costs that would form the basis for pricing in a competitive market.[6/]

But Ms. Murray draws the entirely wrong conclusion from her understanding of Verizon VA's rational business practices. Prices in competitive markets are both the

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[5/] Shelanski Direct at 8-12.

[6/] Murray Rebuttal at 17.

cause and the result of such rational decisions, made by companies that would face constraints similar to Verizon's. Professor Kahn's discussion of long-run incremental cost — which the Commission cited in the *Local Competition Order* to confirm that a long-run approach should be used to ensure that all costs, including fixed investments, are included in TELRIC[7/] — recognizes the unbreakable link between business decisions, costs, and prices.[8/] Ms. Murray's attempt to divorce business decisions from costs and prices is bizarre. Her distorted view of competitive prices is the result of her unrealistic assumption that there will always be a carrier capable of ubiquitous deployment of new technology and network design.[9/] In fact, this is not the case; thus, forward-looking costs generally will not be driven immediately down to costs based on the assumption that the current least-cost technology would be deployed instantaneously throughout the network. If, contrary to fact, this were possible, depreciation rates

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7/ First Report and Order, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 FCC Rcd 15499, 15851 ¶ 692 (1996) ("*Local Competition Order*") (citing Kahn, *Economics of Regulation*, at 70–71).

8/ Dr. Kahn explains that long-run costing should be:

> based on (1) the average incremental variable costs of those added sales and (2) estimated additional capital costs per unit, for the additional capacity that will have to be constructed if sales at that price are expected to continue over time or to grow. Both these components would be estimated as averages over some period of years extending into the future. (footnote deleted)

Economics of Regulation at 85.

9/ Murray Rebuttal at 18.

would be much higher than those endorsed by Ms. Murray when she recommended AT&T/WorldCom's cost study.[10/]

Q. Where there is uncertainty about future technology, shouldn't the firm simply assume for purposes of its long-run cost model that all inputs change to the best technology that it can reasonably foresee?

A. No. Not if the purpose of the cost model is to estimate the costs of a firm seeking to minimize long-run costs. First, such an approach ignores the risk that future technology changes, as yet undefined or not fully defined, might make it rational for the firm to wait to replace equipment. Second, such a rule not only requires inputs to be *variable*, but in fact to be *varied*, even though doing so might not be the cost minimizing strategy. Indeed, the model that Ms. Murray and her clients advocate compounds these problems. For it not only assumes that firms replace their networks with the best technology they can foresee, but that they replace them at every point along the way where technology advances towards that which is the best foreseeable. This approach turns economic principles upside down. Long-run cost minimization should be the principle that determines the adoption of new technology; mandatory, immediate deployment of new technology should not, as in Ms. Murray's model, be the rule that determines costs.

[10/] *See* Shelanski Direct at 12; Shelanski Rebuttal at 7-9.

B. Accounting for the Effect of New Technologies on Forward-Looking Costs Does Not, as Ms. Murray Suggests, Require the Assumption of Instantaneous, Ubiquitous Replacement.

Q. Can you comment on Ms. Murray's argument that the instantaneous replacement model follows from the fact that new technology constrains the value of old technology? [Murray Rebuttal at 17-19.]

A. Ms. Murray's argument overlooks several critical factors. *First*, even if the availability of new technology may constrain the value of the technology already in place, it does not follow that replacement of the old technology is warranted. As Dr. Shelanski discusses in his direct testimony, even after new technology becomes available, the correct replacement calculation might still lead the firm for a time to keep the old technology in place.[11/] Indeed, the fact that new technology might constrain the value of the old technology does not mean that such value is so reduced as to make the old assets worthless and in need of replacement. The incremental-replacement approach that Drs. Gordon and Shelanski advocate in their direct testimony recognizes the economic value of existing facilities and incorporates that value into the firm's forward-looking cost projections. As such, it tries to capture the most efficient, cost-minimizing network going forward.

Ms. Murray herself acknowledges that the incremental replacement approach Drs. Gordon and Shelanski advocate may be "entirely rational" for the incumbent.[12/]

11/ Shelanski Direct at 10-12.

12/ Murray Rebuttal at 17.

But if this is so, then it must be lower-cost than the alternatives open to the firm, such as instantaneous replacement. The fact that Verizon VA might, if starting from scratch, build a network that looks different from the network in its cost model does not mean that the cost model should be based on that hypothetical network. The point is that, not having to start from scratch, Verizon has a lower-cost alternative to instantaneous, static optimization with the latest technology. And any model that produces a contrary outcome — for example, AT&T/WorldCom's result that a hypothetical carrier should have costs considerably lower than Verizon's — is immediately suspect.

Second, this same analysis holds true for any other real-world firm in a competitive market. Put another way, barring unusual circumstances, firms in a competitive market will provide service using a mix of technological vintages. No firm is likely to have the latest technologies deployed ubiquitously throughout its network, precisely because that generally would not be the cost-minimizing strategy over the long run. The result is that prices in a competitive market will not, as Ms. Murray assumes, be instantaneously reduced to the costs of a hypothetical firm always having the most current technologies, ideally configured to serve existing demand.

To take one example, if Boeing were to develop a new, more efficient commercial aircraft, no airline would instantly replace all the planes in its fleet with the new type of aircraft. Moreover, the ticket prices that airlines charge would not be instantaneously reduced to reflect the lower operating costs of the new type of plane. This is a critical point since we are, after all, discussing not the market for the sale of

entire telecommunications facilities such as switches, but the rental market for some or all the capacity of a facility. Thus, even if one assumes that the development of a new, efficient switch would constrain the resale value of a single older switch, it does not follow that the rate for leasing capacity on an older switch that is part of an existing telecommunication network would instantaneously be reduced to the cost of leasing capacity on a hypothetical network having all new switches.

Third, any discussion of the effect of new technology on the value of the old must take into account the *full* cost of the new technology. But Ms. Murray does not discuss how, once correct capital costs and depreciation are factored into her model, the hypothetical new network costs would relate to the costs of an efficient, real-world, forward-looking firm. If a market like that assumed by Ms. Murray and her clients — in which a hypothetical network with ideally efficient technologies could instantaneously sprout up at any time — actually existed, the depreciation and capital costs of investments in new technologies would be extremely high, a fact that AT&T/WorldCom's testimony entirely ignores.[13/] As a result, Ms. Murray and her clients never come to grips with the economics of their model and the fact that it will virtually always waste economic value and entail very high costs.

13/ Indeed, as explained in Verizon-VA's accompanying surrebuttal testimony, the assumptions underlying AT&T/WorldCom's proposed cost of capital are entirely inconsistent with their assumption of an instantaneous replacement model. *See* Vander Weide Surrebuttal at § III.

Q. Can the instantaneous replacement model be justified on the grounds that it captures what an incumbent carrier would have to do in response to competition from a new, optimally constructed network?

A. No. An efficient competitor would cause the incumbent to minimize its costs. But it does not follow that the incumbent must model its costs as if it had deployed an entirely new network like the competitor. The fact that new technology constrains the value of old plant does not mean that the remaining economic value of the old plant can be assumed away. If it is more efficient (or "entirely rational" in Ms. Murray's words) for the incumbent to replace its network incrementally, making use of existing facilities that retain economic value even after the new technology becomes available, then it makes no sense to force the incumbent to model its costs based on the full replacement assumption.

Q. But wouldn't the hypothetical competitor, because it has constructed the optimal network with the best available technology, then have lower forward-looking, long-run costs and prevent the incumbent from being able to rely on its existing network?

A. No. This is a fundamental error of the instantaneous replacement model. An incumbent generally would not keep old technology that was more costly to operate than to replace on a forward-looking basis. But it does not follow that new technology always makes all existing assets comparatively inefficient to operate. If the incumbent has decided not to replace a network element because keeping rather than replacing the existing element makes long-run costs *lower* on a forward-looking basis, then competition from a new

network would not drive the incumbent to replace its existing, efficient facilities to reflect the *short-run* efficiencies of the new technology.

The idea behind the competition rationale for the instantaneous replacement model appears to be that, because an ILEC should be treated as being subject to competition at any time from a newly constructed, optimal network, it should have to model its costs as if it, too, has the optimal network at every point in time. Even leaving aside the entirely fictional nature of the premise, this is not correct. The incumbent should have to recognize that it cannot have long-run, forward-looking costs higher than those of an efficiently managed network. But it does not follow that the new entrant with the optimal network has long-run costs lower than those of an incumbent that efficiently and incrementally expands and replaces its network.

Moreover, the forward-looking costs of a new, optimal network must be recognized to include the risk-adjusted capital and depreciation costs of constructing such a network under the assumptions AT&T/WorldCom make. For, if the incumbent is assumed to be subject to entry at any time by an optimal, "best-available" network, then any new entrant will similarly have to assume that it, too, will be subject to such competition down the road. If, as Ms. Murray argues, such entry requires incumbent firms to model costs as if they had reconfigured their networks to match the technology of the new entrant, then the entrant will anticipate that it, too, will have to treat its network as instantaneously replaced when the next newly constructed entrant appears. The entrant's forward-looking depreciation and capital costs will therefore anticipate

the required future adjustment and rise accordingly. To ignore these costs of a reconstructed network (as AT&T/WorldCom do) is to depart from the assumptions of rational, forward-looking decision making that underlie efficient, long-run economic analysis.

Q. What is your response to Ms. Murray's assertion that the "most straightforward way to measure forward-looking economic costs is to determine the costs of owning and operating a reconstructed local network?" [Murray Rebuttal at 18-19.]

A. We disagree. Perhaps because she recognizes that economic principles do not lead to the instantaneous, full replacement model, Ms. Murray shifts here to the pragmatic argument that it is difficult to measure the changing value of a real-world network as technology changes. Yet she provides no support for the position that it is easier to model the costs of a network that nobody in fact operates than to model the forward-looking costs of an actual carrier. And in any case, comparative ease of modeling isn't worth much if it leads one to model the wrong thing.

Verizon VA's recurring cost model estimates the costs of utilizing a forward-looking technology mix network-wide, but leaves out the false "efficiencies" that arise from Ms. Murray's insistence on instantaneous, ideally-configured construction. As explained in Verizon VA's direct testimony, using a pure forward-looking mix of technology that Verizon believes to be most efficient for future builds is a

straightforward way to estimate long-run costs.[14/] However, correctly implementing this approach requires that the cost model reflect the efficiencies that the firm (*i.e.*, Verizon) can reasonably be expected to achieve, given the uncertainties and complexities that Verizon faces. Verizon VA's approach is designed to do this and, thus, is appropriately forward-looking and long-run.[15/]

C. Verizon VA's Approach Is Consistent with the Most Economically Appropriate Interpretation of TELRIC.

Q. Should TELRIC be applied as described by Ms. Murray? [Murray Rebuttal at 6-11.]

A. No. Under the most economically appropriate interpretation of the Commission's standard, cost studies should be based upon the efficient technologies that are deployed in the incumbent LEC's network and should model the forward-looking costs the incumbent expects to incur. For example, in the *Local Competition Order*, the Commission states:

> prices for interconnection and access to unbundled elements would be developed from a forward-looking economic cost methodology based on the most efficient technology *deployed in the incumbent LEC's current wire center locations.* This approach mitigates incumbent LECs' concerns that a forward-looking pricing methodology ignores *existing* network design, while basing prices on efficient, new technology *that is compatible with the existing infrastructure. This benchmark of forward-looking cost and existing network design most closely represents the incremental*

[14/] Shelanski Direct at 5-7; Gordon Direct at 14-17.

[15/] That is, Verizon's approach correctly reflects that the network is deployed over time in an uncertain world. *See* Gordon Direct at 31-33; Shelanski Direct at 28-29.

costs that incumbents actually expect to incur in making network elements available to new entrants.[16/]

That is, the reference to "use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers" in the Commission's rules (47 C.F.R. § 51.505) should be interpreted to account for how the ILEC acting efficiently can be expected to deploy new technology in its network. This is the approach on which Verizon based its cost studies; and it is the most economically appropriate way in which to interpret the Commission's TELRIC rules.

Put another way, the most economically correct way to interpret those rules is to allow the use of Verizon VA's true long-run approach — in which it assumes the network is reconstructed *over time* to minimize costs. Verizon VA's approach correctly reflects the fact that one cannot minimize costs in one part of the network without considering impacts on other parts of the network. Nevertheless, its studies assume that forward-looking technology — the mix of technology that is going to be deployed in new and replacement projects in the study period — is used throughout its network.

16/ *Local Competition Order* at 15848-49, ¶ 685 (emphasis added). Similarly, the Commission recognized in the *Local Competition Order* that "[w]ith respect to prices developed under the forward-looking, cost-based pricing methodology, we conclude that incumbent LECs' rates for interconnection and unbundled elements must recover costs in a manner that reflects the way they are incurred." *Id.* at 15813, ¶ 622.

Q. Ms. Murray suggests that Dr. William Taylor, in testimony for Verizon in a different proceeding, supported her view of TELRIC. [Murray Rebuttal at 10-11.] Is she correct?

A. No. Ms. Murray quotes statements by Dr. Taylor out of context and misleadingly claims that his statements affirming that forward-looking studies estimate costs based on a "reconstructed" network are inconsistent with what Verizon did.

Dr. Taylor's Delaware testimony is in fact consistent with Verizon VA's testimony in this proceeding. In particular, he made the following points:

- An economically appropriate approach does not require instantaneous network reconstruction. TELRIC should be based on how investments occur over the long run to serve demand as it emerges, not demand at one point in time.[17/]

- TELRIC models should estimate the costs that an efficient incumbent expects to incur to provide unbundled network elements — *i.e.*, they should account for an incumbent's continuous investment decisions. It is not appropriate to model a network that instantaneously serves existing demand.[18/]

17/ Delaware Public Service Commission, *In the matter of the Application of Bell Atlantic-Delaware, Inc. for the Approval of Its Statement of Terms and Conditions under Section 252(f) 5 of the Telecommunications Act of 1996 (filed December 16, 1996)*, P.S.C. Docket No. 96-324, Transcript v. 5 at 1248, 1292-93.

18/ *Id.* at 1250-51, 1254-56, 1261, 1282.

- It is not economically appropriate to globally use a replacement switch discount or base cable sizes on the totality of expected demand as it stands today. Modeling the costs of a firm that starts from ground zero to serve today's demand without acknowledging the need to accommodate growth and future uncertainties over time is, in fact, a short-run approach.[19/]

Q. Do you agree with Ms. Murray's claim that your testimony is inconsistent with Verizon's statements in its briefs before the Supreme Court? [Murray Rebuttal at 9-10.]

A. Our testimony is based on our views as independent economists; our role is not to interpret or defend the legal arguments that Verizon (or any other party) has made before a court. As economists, our conclusions are that, for the reasons explained here and in Dr. Gordon's and Dr. Shelanski's previous testimony, (1) the "instantaneous, complete replacement" model advocated by Ms. Murray and AT&T/WorldCom is economically incorrect and not the appropriate way to model long-run, forward-looking costs; and (2) in contrast to AT&T/WorldCom's extreme interpretation of TELRIC, Verizon VA's studies conform to the most economically appropriate interpretation of TELRIC. As a result, we recommend that the Commission adopt Verizon VA's approach.

19/ *Id.* at 1248-49, 1254, 1260, 1292-93.